

LETEPSAMMIA FRANKI, A NEW
SPECIES OF DEEP-SEA CORAL
(COELENTERATA: SCLERACTINIA: MICRABACIIDAE)

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Abstract.—*Letepsammia franki*, a new species of deep-sea, solitary corals belonging to the family Micrabaciidae, is described and figured. This new species resembles the type species, *L. formosissima* (Moseley, 1876), in having highly perforated septa and wall, and well-developed deltas. It differs in the distinctly beaded appearance of its septa, deltas, and columella; its slightly biconvex corallum with prominent basal apex; its projection of costae beyond septa at the distal edge, forming a narrow marginal shelf; and its more open basal wall. It is Recent in origin and is found in the Indian Ocean off the southeast coast of Africa at depths varying from approximately 50 to 650 meters. It thus falls within both the geologic and bathymetric ranges of the type species, *L. formosissima*.

Letepsammia was erected by Yabe & Eguchi in 1932, as a subgenus of *Stephanophyllia*. They based this subgenus by monotypy on the well-developed, spongy columella, and highly perforated septa and wall of the subgenotype, *S. formosissima* Moseley. More recent authors, such as Squires (1965, 1967), Keller (1977), Cairns (1982), and Owens (1984a, 1984b, 1986a), however, deemed these differences, along with its larger size, thinner base, and more prominent marginal shelf, sufficient to denote generic differences, and informally acknowledged the subgenus as a genus in itself. Eventually, Owens (1986b) formally described and officially elevated *Letepsammia* to generic rank.

At present, *Letepsammia* consists of only two species, *L. formosissima* and the new species described herein, *L. franki*.

Genus *Letepsammia* Yabe & Eguchi, 1932
Letepsammia franki, new species
Figs. 1, 2

Description.—Corallum large, loose, slightly biconvex, with narrow but prominent shelf. Wall thin, highly perforate. Callicular depression deep, narrow, elongate. Fusion of proximal margins of tertiary septa with inner edges of secondary septa form broad, porous, coarsely dentate deltoid structures. Diameter of specimens 10.5–31 mm, height 3–11 mm, average H:D ratio 0.39.

Costae long, thin, nearly smooth, thickening slightly distally. Intercostal loculi wider than costae, but interrupted by closely spaced synapticulae that connect adjacent costae with base of intervening septum. Outer margins of costae finely serrated. Costae begin as six (first cycle) at apex of convex base and bifurcate immediately (second cycle); outer costae of each system bifurcate about one-eighth the distance from center, with inner pairs dividing soon after (third cycle); fourth and fifth cycles overlap, with outermost costae of each system undergoing

Order Scleractinia
Suborder Fungiaida
Superfamily Fungioidea Vaughan &
Wells, 1943
Family Micrabaciidae Vaughan, 1905

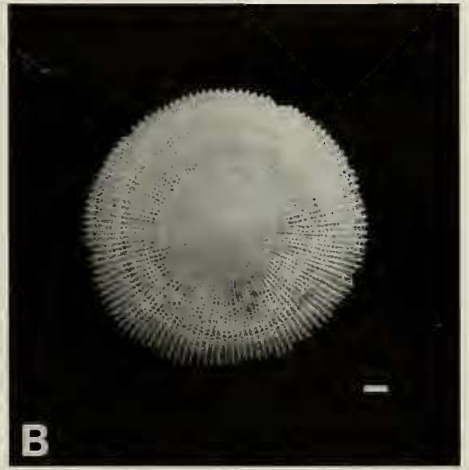
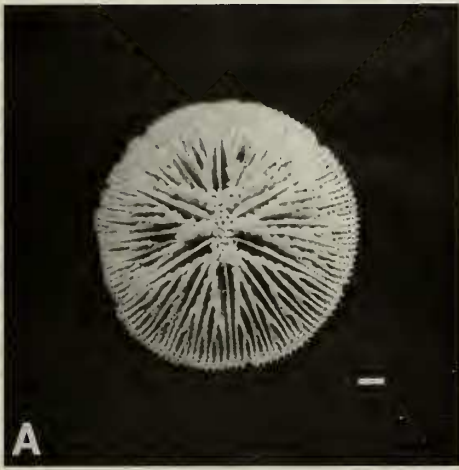


Fig. 1. *Letepsammia franki*: A, Oral view of holotype (USNM 75638), Anton Bruun 390-S; B, Aboral view of holotype; C, Side view of a paratype (USNM 75639), Anton Bruun 390-S; D, Thin section of a paratype (USNM 75640), under reflected light, showing thin, widely spaced trabeculae, radial perforations, and coarse dentation of distal margin of septum, Anton Bruun 390-S. Scale bars = 2 mm.

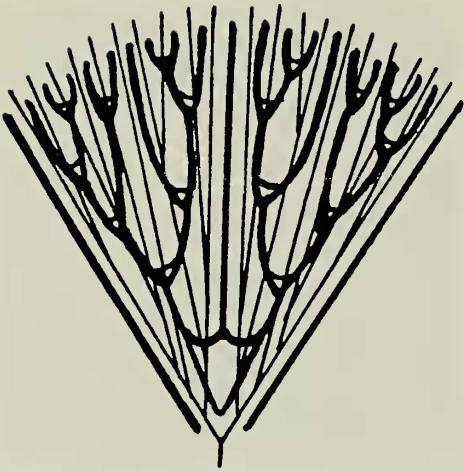


Fig. 2. Diagrammatic representation of one system of *Letepsammia franki*. Heavy lines represent septa; thin lines, costae. 5 \times .

two bifurcations before innermost again divide; sixth cycle incomplete, with only one outer pair and one inner pair of each system bifurcating (Fig. 2).

Septa thin, highly perforate, and, except for primaries, irregularly lined with vepreculae. Vepreculae closely and evenly spaced on primaries. Interspaces much broader than septa. Synapticulae scarce except along distal base of septa. Primaries free, straight, lower than adjacent septa; finely serrated proximally but coarsely dentate with short, clubby spines near distal margin. Secondaries straight, as tall as neighboring septa, and dentate with short, broad spines along full length of margin. Adjacent septa in tertiary position unite proximally with secondaries in conspicuous, triangular, trabecular masses that form broad, porous deltas. Tertiary septa do not extend to distal margin, but instead give rise to a series of bifurcations immediately beyond deltas to produce higher cycle septa, for a total of 120 septa.

Columella spongy, elongate, narrow, with single row of stubby spines running full length.

Trabeculae simple, wavy, grouped in three's in loose fan system; interareas ar-

chuate between groupings, undifferentiated within; perforations of various sizes roughly aligned horizontally and radially.

Types. — Holotype: USNM 75638, Anton Bruun 390-S (29°35'S, 31°42'E; 138 m). Paratypes: USNM 75639 (1), 75640 (36), Anton Bruun 390-S (same as holotype); 75641 (1), Anton Bruun 370-H (24°41'S, 35°28'E; 311–320 m); 75642 (16), Anton Bruun 370-G (24°40'S, 35°28'E; 635 m); 75643 (2), Anton Bruun 372-G (24°53'S, 34°56'E; 55 m); 75644 (6), Vema Cruise 14, Sat 6 (29°48'S, 31°16'E; 232 m).

Occurrence. — Recent, Indian Ocean off southeast coast of Africa; 50–650 meters.

Discussion. — *Letepsammia franki* resembles both *Rhombopsammia niphada* and *L. formosissima*, *R. niphada* because of its slightly biconvex corallum, its deep, long, narrow calicular depression, and its narrow but prominent shelf; and *L. formosissima* because of its highly perforate septa and wall, its well-developed deltas, and the reduced, restricted trabecular pattern of its septa-similarities of generic significance. *Letepsammia franki* is unique in having a papillose columella and coarse septal dentation that give its corallum a distinctly beaded appearance. Owens (1986a), in noting the similarities between *L. formosissima* and *R. niphada*, suggested that *R. niphada* may be a morphologic intermediate between *Letepsammia* and *Rhombopsammia*. The similarities between *L. franki* and *R. niphada* strongly reinforce this suggestion.

Cairns (1989), who had seen the specimens of *L. franki* deposited at the National Museum of Natural History, believed that specimens of *L. formosissima* from the western Indian Ocean referred to by Van der Horst (1927) and Boshoff (1981), and those from the Red Sea mentioned by Gardiner & Waugh (1939) are probably *L. franki*, the then undescribed species of *Letepsammia* alluded to by both Squires (1967) and Owens (1986b). Cairns & Keller (1993) also remarked on the same undescribed species, which Cairns in a later personal com-

munication considered to be this new species. Similarly, the "button coral" figured by Williams (1986), which he referred to as "genus *Stephanophyllia*," is most likely *L. franki*.

When Yabe & Eguchi (1932, 1934) erected the subgenus *Letepsammia*, they included in their subgenus a fossil form from the Plio-Pleistocene boundary, *Stephanophyllia (L.) japonica* nov. This species was subsequently determined by Squires (ca. 1967) to be synonymous with *S. superstes* Ortman, which he further reassigned as *L. superstes*. Thus, when Owens (1986b) formally described *Letepsammia*, she accepted Squires' redesignation and included in the genus two species: *L. formosissima* and *L. superstes*.

More recently, however, Cairns (1989) recounted a personal communication with H. Zibrowius, in which Zibrowius stated that he had examined the holotype of *S. superstes* and believed it to be a juvenile form of *L. formosissima*. If these synonymies are correct, then the geologic range of *L. formosissima* must be extended to the Plio-Pleistocene boundary, and thus exceeds the geologic range of the new species, *L. franki*.

Consequently, the genus *Letepsammia* presently includes only *L. formosissima* and *L. franki*.

Etymology. — The species name is in honor of Frank A. Owens, my husband, whose photographs of specimens are an integral part of my published works.

Acknowledgments

I wish to thank S. D. Cairns of the Smithsonian Institution for making available to me the specimens used in this study; D. A. Dean of the Smithsonian Institution for his assistance in thin-sectioning some of the specimens; and F. A. Owens and E. H. Hughes for photographing the specimens used in this paper. I also wish to make special acknowledgment of D. F. Squires whose unfinished work on micrabaciid corals in-

spired me to undertake my own study of this group.

Literature Cited

- Boshoff, P. H. 1981. An annotated checklist of Southern African Scleractinia.—South African Association for Marine Biological Research, Oceanographic Research Institute, Investigational Report 49:45 pp.
- Cairns, S. D. 1982. Antarctic and subantarctic Scleractinia.—Antarctic Research Series 5, 34(1):1–74.
- . 1989. A revision of the ahermatypic Scleractinia of the Phillipine Islands and adjacent waters, Part I: Fungiacyathidae, Micrabaciidae, Turbinoliinae, Guyniidae, and Flabellidae.—Smithsonian Contributions to Zoology 486:15–18.
- , & N. B. Keller. 1993. New taxa and distributional records of azooxanthellate Scleractinia (Cnidaria, Anthozoa) from the tropical southwest Indian Ocean, with comments on their zoogeography and ecology.—Annals of the South African Museum 103(5), 1993:213–292.
- Gardiner, J. S., & P. Waugh. 1939. Madreporaria excluding Flabellidae and Turbinolidae.—Scientific Reports of the John Murray Expedition 1933–34, 6(5):225–242.
- Keller, N. B. 1977. New species of genus *Leptopenus* and some peculiarity of the deep-sea ahermatypic corals.—Trudy Instituta Okeanologii 108: 37–43. [In Russian.]
- Owens, J. M. 1984a. Microstructural changes in the Micrabaciidae and their ecologic and taxonomic implications.—Palaeontographica Americana 54:519–522.
- . 1984b. Evolutionary trends in the Micrabaciidae: an argument in favor of preadaptation.—Geologos 2(1):87–93.
- . 1986a. *Rhombopsammia*, a new genus of the family Micrabaciidae (Coelenterata: Scleractinia).—Proceedings of the Biological Society of Washington 99:248–256.
- . 1986b. On the elevation of the *Stephanophyllia* subgenus *Letepsammia* to generic rank (Coelenterata: Scleractinia: Micrabaciidae).—Proceedings of the Biological Society of Washington 99:486–488.
- Squires, D. F. 1965. A new record for *Leptopenus*, a rare deep-water coral.—Nature 207:878–879.
- . 1967. The evolution of the deep-sea coral family Micrabaciidae.—Studies in Tropical Oceanography 5:502–510.
- . [ca. 1967]. Tertiary and extant Scleractinian corals of the family Micrabaciidae. Unpublished partial manuscript on deposit at the Na-

- tional Museum of Natural History, Smithsonian Institution.
- Van der Horst, C. J. 1927. Eupsammid corals from South Africa.—Fisheries and Marine Biological Survey, Report Number 5, for the year 1925, 7 pp.
- Williams, G. C. 1986. What are corals?—*Sagittarius* 1(2):11–15.
- Yabe, H., & M. Eguchi. 1932. Some Recent and fossil corals of the genus *Stephanophyllia* H. Michelin from Japan.—Tohoku Imperial University Scientific Reports, series 2 (Geology), 15(2):55–63.
- . 1934. Probable generic identity of *Stephanophyllia* Michelin and *Micrabacia* M. Edwards and J. Haime.—Proceedings of the Imperial Academy of Japan, 10(5):278–281.

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